

Physics-Based Pneumatic Hammer Instability Model, Phase II

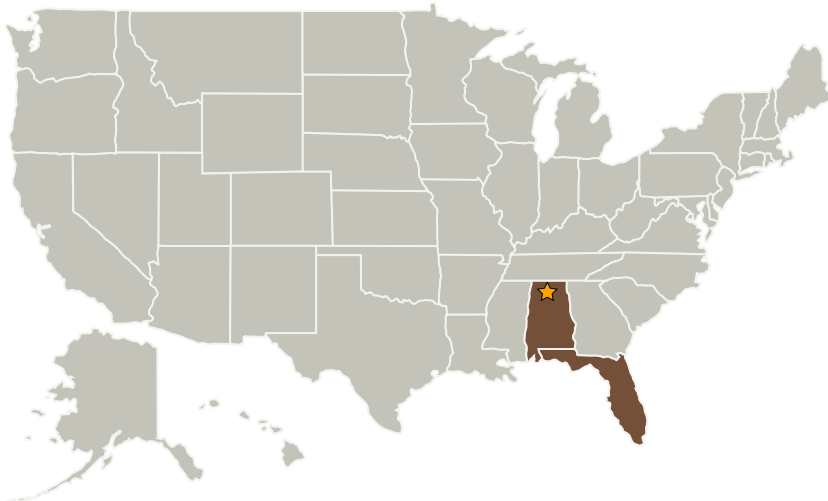
Completed Technology Project (2006 - 2008)



Project Introduction

The objective of this project is to develop a physics-based pneumatic hammer instability model that accurately predicts the stability of hydrostatic bearings operating in a turbulent, compressible fluid. In phase 2, the rig will be fabricated and assembled, design of experiment will be executed. The empirical data will be used to determine if a particular variable, or input parameter, was a contributor to pneumatic hammer instability. If not, the variable is eliminated. If the variable is determined to be a contributor, it is non-dimensionalized and included in the equations of motion to develop a physics-based stability criteria. The resulting criteria will then be validated using test data. If the criteria is not validated, a gap assessment will be completed and the process is repeated. Once the criteria is validated, it is implemented.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Florida Turbine Technologies, Inc.	Supporting Organization	Industry	Jupiter, Florida



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Alabama

Florida

Project Transitions



December 2006: Project Start



November 2008: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.2 Computational Materials